

Plasma Catalytic Extraction of Oxygen from the Martian Atmosphere, Phase I

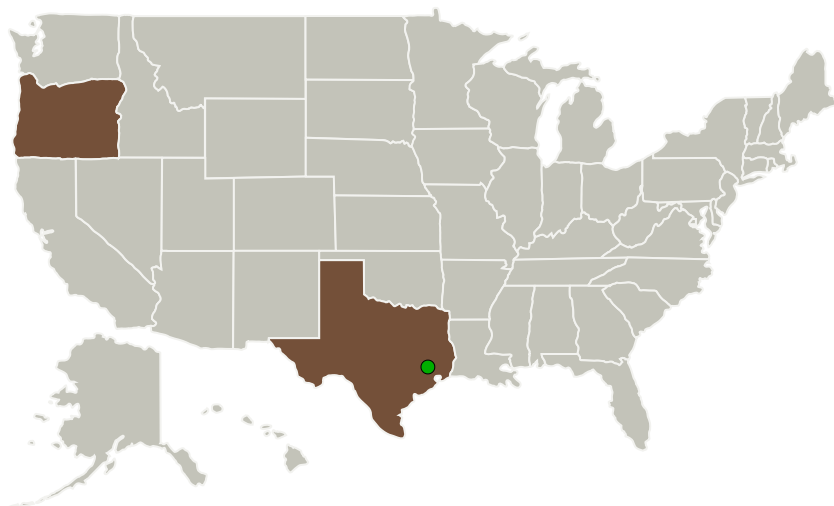
Completed Technology Project (2011 - 2011)




Project Introduction

Plasma catalytic techniques are proposed for the extraction of oxygen from the abundant carbon dioxide contained in the Martian atmosphere (95% CO₂). The Phase I project will clearly demonstrate the feasibility of achieving these goals by focussing on key aspects of the technology, such as efficient microwave plasma catalytic conversion at relevant pressures and processing rates. The Phase II program will advance the technology through a more in depth development effort to the point where a fully functional prototype will be assembled and tested. Successful culmination of this effort will result in a self contained, energy efficient technique that can be utilized in robotic precursor missions to Mars to stockpile oxygen in support of future manned missions to the planet.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
UMPQUA Research Company	Lead Organization	Industry	Myrtle Creek, Oregon
 Johnson Space Center(JSC)	Supporting Organization	NASA Center	Houston, Texas



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Primary U.S. Work Locations

Oregon

Texas

Project Transitions



February 2011: Project Start



September 2011: Closed out

Closeout Documentation:

- Final Summary Chart(<https://techport.nasa.gov/file/138406>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

UMPQUA Research Company

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Richard Wheeler

Co-Investigator:

Richard M Wheeler

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Technology Maturity (TRL)

Start: **1**
Current: **3**
Estimated End: **3**



Technology Areas

Primary:

- TX07 Exploration Destination Systems
 - └ TX07.1 In-Situ Resource Utilization
 - └ TX07.1.3 Resource Processing for Production of Mission Consumables

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System